REMARKS

This communication is responsive to the Final Office Action dated March 25, 2005. Applicant has made no claim amendments. Claims 1-53 remain pending.

Claim Rejection Under 35 U.S.C. § 102

In the Final Office Action, the Examiner maintained the rejection of claims 14, 17-18, 40, 44-45 under 35 U.S.C. 102(a) as being anticipated by Malloy et al. (US. 6,122,636). Applicant respectfully traverses the rejection. Malloy et al. fails to disclose each and every feature of the claimed invention, as required by 35 U.S.C. 102(a), and provides no teaching that would have suggested the desirability of modification to include such features.

Examiner's Response to Applicant's Arguments

Before addressing the individual claim rejections, Applicant submits the following preliminary comments. In para. 14 of the Office Action, the Examiner responded to Applicant's previous remarks as "[t]he applicant argues that Malloy does not disclose a virtual table that stores data and that Malloy is referring to a relational database (Page 12 Para 3). However, it is well known in the art that a relational database is a set of tables containing rows and columns, which contain data for viewing by the user."

This is an incomplete characterization of Applicant's remarks. The Examiner overlooks Applicant's remarks that Malloy fails to teach or suggest a client device that includes a virtual table to store multidimensional data received from a server. Applicant's claims specifically require a virtual table stored on a client device, and the Examiner incorrectly omits this requirement.

Further, although the Examiner is correct that it is well known in the art that a relational database is a set of tables containing rows and columns, it is also well known that such tables are maintained within the relational database at the database server. The data communicated to a client is typically serialized and communicated over a protocol, such as HTTP, in response to a query. In a conventional relational database, the client device itself does not store a virtual table. Thus, although the Examiner's statement is correct that relational databases have tables, this argument is incomplete and overlooks specific requirements of Applicant's claims.

Similarly, the Examiner's response fails to consider the requirement that the server store state data defining a current viewing location within the virtual table at the client device. In a relational database, such as the Malloy system, the server does not store state data defining a current viewing location within a virtual table that is stored on the client device. Quite the contrary, in the Malloy conventional relational database, the server may store state data relating to the relational tables stored at the server, but this is quite different from the requirements of Applicant's claims. The server has no knowledge of a current viewing location within a virtual table at the client device. For at least these reasons, the Examiner's response at para. 14 to Applicant's previous comments are incomplete and fail to fully address the requirements of Applicant's claims.

Thus, it appears that the Examiner continues to misunderstand certain features of the present invention or the prior art. For purposes of clarification, Applicant again provides the following brief overview of one embodiment of the present invention before addressing the Examiner's position with respect to each of the pending claims.

As described in the present application, a virtual table is used by a client device to buffer multidimensional data received from a server. The server, however, maintains state data related to the virtual table stored at the client device and determines how to best layout the data for presentation to a user. For example, the server may perform calculations to determine the appropriate layout for a viewable web page and, upon concluding those calculations, generate the appropriate code for execution by the client device. The client device may display only a subset of the data within the virtual table that is already stored on the client device. In particular, the client device renders and displays the data stored within a currently viewed portion of the virtual table, and need not receive the data again from the server. By interacting with the client device, the user can scroll a viewable window throughout the virtual table to view the data stored on the client device without necessarily requiring interaction with the server and continuous regeneration of the web page. However, because the page layout calculations are performed by the server based on the known current viewing location at the client, and the multidimensional data is buffered at the client device within the virtual table, the client device may render and display the page more quickly than other systems that perform similar calculations at the client.

The conventional relational database architecture of Malloy in view of the other references fails to teach or suggest anything similar to Applicant's claimed architecture. Applicant now address the specific requirements of each claim and the deficiencies of the references.

Claim 14

With respect to claim 14, Malloy fails to teach or suggest a client device that includes a virtual table to store multidimensional data received from a server, wherein the server includes state data defining a current viewing location within the virtual table.

In contrast, Malloy describes a system in which a relational database can be used to support an on-line analytical processing (OLAP) system.[1] It is well known that relational databases consist of a set of interrelated tables for use in storing data. As described in Malloy, this form of database is often ill suited for use within an OLAP environment.[2] To overcome this issue, Malloy describes a technique by which a relational database can be used to "emulate" a multi-dimensional database.[3]

However, Malloy fails to teach or suggest a client device that includes a virtual table to store multidimensional data received from a server, wherein the server includes state data defining a current viewing location within the virtual table stored on the client device.

In rejecting Applicant's claim 14, the Examiner specifically refers to column 4, lines 62-67, Figure 4 and column 2, lines 56-60. However, column 4, lines 62-67 of Malloy merely refer to a typical client-server architecture of an OLAP system. According to Malloy, Figure 4 shows "a structure for storing multi-dimensional data in a relational database structure." Specifically, Figure 4 shows a "schema" for the relational database maintained by the database server.

Consequently, the Examiner is incorrect in asserting that Figure 4 shows a client device storing a virtual table that stores multidimensional data received from a server. In contrast, Malloy is refering to the relational database itself as maintained by storage manager 114 and BD2 server 116. Malloy is silent with respect to the use of a virtual table to buffer multi-dimensional data at a client device.

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[1] Summary.
[2] Background.
[3] Col. 2, ll. 61-62.

Moreover, the Examiner is also incorrect in asserting that Malloy describes a server that maintains state data that defines a current viewing location into a virtual table stored on a client device. Column 2, lines 56-60, cited by the Examiner, merely refer to the relational database itself, and describe the relational database tables maintained by the server to emulate a multi-dimensional database. Applicant's invention is unrelated to emulation of a multi-dimensional database, and Malloy fails to teach or suggest a server that maintains state data that defines a current viewing location into a virtual table stored on a client device, as required by claim 14. Further, Malloy fails to teach or suggest a client device coupled to the server to display a portion of the multidimensional data in the virtual table to a user.

Claim 17

For similar reasons, Malloy fails to teach or suggest a server that maintains state data that includes a starting row and a starting column within the virtual table stored in a client device, as required by claim 17. As stated above, in contrast to these requirements, Malloy describes a relational database maintained by a server to emulate a multi-dimensional database. Malloy does not describe a server that maintains state data including a starting row and a starting column of a virtual table stored in a client device, as required by claim 17.

In rejecting claim 17, the Examiner further refers to column 13, lines 34-37 of Malloy. However, column 13, lines 34-37 recite a preamble of a claim to an article of manufacture having executable instructions. This section of Malloy does not have any relevance to a server that maintains state data including a starting row and a starting column of a virtual table stored in a client device, as required by claim 17.

Claim 18

Malloy fails to teach or suggest a server that maintains state data that includes one of a font size, a column width, a row width, a column height, a row height, one or more column labels and one or more row labels, as required by claim 18. As stated above, in contrast to these requirements, Malloy describes a relational database maintained by a server to emulate a multi-dimensional database. Malloy does not describe a server that maintains state data including one

of a font size, a column width, a row width, a column height, a row height, one or more column labels and one or more row labels, as required by claim 18.

In rejecting claim 18, the Examiner again refers to column 13, lines 34-37 of Malloy. However, column 13, lines 34-37 merely recite a preamble of a claim to an article of manufacture having executable instructions. This section of Malloy does not have any relevance to a server that maintains state data including one of a font size, a column width, a row width, a column height, a row height, one or more column labels and one or more row labels, as required by claim 18.

Claim 40 and 44

With respect to independent claim 40, Malloy fails to teach or suggest storing a report object defining dimensions and members of multidimensional data that are included in an electronic report, translating the report object into a client-side script, communicating the client-side script to a client device, and executing the client-side script to create a representation of the report object on the client-device.

In rejecting claim 40, the Examiner refers to column 4, lines 62-67 and column 5, lines 43-54. However, column 4, lines 62-67 of Malloy merely refer to a typical client-server architecture of an OLAP system. Column 5, lines 43-54 makes a passing reference to a client program. Malloy makes no mention of translating a report-object into a client-side script and then communicating the client-side script to a client device. In fact, Malloy makes no mention client side scripts or report objects at all, let alone the teaching or suggesting these elements of claim 40.

Claims 44 and 45

With respect to claims 44 and 45, Malloy fails to teach or suggest storing dimension objects and member objects that define the dimensions and members of each dimension to be included in a client-side representation of a report object for use in translating the report object into a client-side script. The cited portions of Malloy describe a conventional OLAP system and fail to teach or suggest these elements of Applicant's claims 44 and 45.

Malloy et al. (US 6,122,636) fails to disclose each and every limitation set forth in claims 14, 17-18, 40 and 44-45. For at least these reasons, the Examiner has failed to establish a prima facie case for anticipation of Applicant's claims 14, 17-18, 40 and 44-45 under 35 U.S.C. 102(b). Withdrawal of this rejection is requested.

Claim Rejection Under 35 U.S.C. § 103

In the Office Action, the Examiner rejected claims 1-13, 15, 19-20 and 43 under 35 U.S.C. 103(a) as being unpatentable over Malloy et al. (US 6,122,636) in view of King et al. (US 6,161,114). The Examiner further rejected claims 16 and 46-52 under 35 U.S.C. 103(a) as being unpatentable over Malloy in view of Ramaswamy et al. (US 6,510,164), rejected claims 21- 39 and 53 over Malloy et al. in view of King et al. and further in view of Earle (US 5,359,724), and rejected claims 41-42 over Malloy in view of Marmor (US 6,601,108).

Applicant respectfully traverses the rejections to the extent such rejections may be considered applicable to the claims as amended. The applied references fail to disclose or suggest the inventions defined by Applicant's claims, and provide no teaching that would have suggested the desirability of modification to arrive at the claimed invention.

Claim 1

With respect to independent claims 1, for example, the applied references lack any teaching that would have suggested storing state data on a server, wherein the state data defines a current viewing location within a data table storing multidimensional data on a client device. The references also fail to teach or suggest formatting a web page at the server based on the current viewing location within the data table at the client device as defined by the state data, and communicating the web page to the client device for displaying to a user a portion of the data table stored on the client device, as further required by claim 1.

As discussed above, Malloy describes the structure of the relational database as maintained by a database server, but fails to teach or suggest storing state data on a server, wherein the state data defines a current viewing location within a data table storing multidimensional data on a client device, as required by Applicant's claim 1.

As correctly recognized by the Examiner, Malloy fails to teach or suggest formatting a web page at the server based on the current viewing location within the data table as defined by the state data. To overcome this deficiency, the Examiner cites King, which describes generating a web page. However, neither Malloy nor King suggest formatting a web page at the server based on the current viewing location within the data table at the client device as defined by the state data maintained by the server, as required by claim 1.

Claim 2-3

With respect to claim 2, neither Malloy nor King suggest formatting a web page at the server based on server-side state data that includes a starting row and a starting column within the data table stored by the client device, as required by claim 2.

Similarly, with respect to claim 3, neither Malloy nor King suggest formatting a web page at the server based on server-side state data that a font size, a column width, a row width, a column height, a row height, one or more column labels and one or more row labels, as required by claim 3.

Claim 4-5

Neither Malloy nor King suggest formatting a web page at the server by calculating widths and heights for rows and columns of the web page based on data of the data table stored on the client device, and generating code to format the web page according to the calculated widths and heights, as required by claim 4. Again, Malloy merely discloses a relational database structured to emulate a multi-dimensional database, and the HTML formatting techniques described by King makes no mention of using a virtual table stored on the client device.

Claim 6

Neither Malloy nor King teach or suggest formatting a web page at the server by embedding scroll bars in the web page to display a viewable window into the data table based on an amount of data within the data table to display the portion of the data table stored on the client device, as required by claim 6 as amended.

Moreover, neither Malloy nor King teach or suggest receiving at the client device input from the user to scroll the viewable window within the web page, and displaying a different portion of the data table stored on the client device without requiring the server to regenerate the web page, as further required by claim 6 as amended.

Claim 8-13

For reasons set forth above, neither Malloy nor King teach or suggest format a web page at the server based on the current viewing location of the client-device to display a portion of the data table buffered on the client device in accordance with the state data maintained at the server, as required by claim 8 as amended. Neither Malloy nor King make any mention of a data table on a client device to buffer multi-dimensional data received from a server. Neither Malloy nor King teach or suggest a client device that displays a portion of the data table with a web page formatted by a server, as further required by claim 8. Claim 9-13 are patentable of Malloy and King for at least the reasons set forth above.

Claims 19-20

Neither Malloy nor King teach or suggest formatting a web page at the server based on state data for a data table stored on a client-device. With respect to claim 19, neither Malloy nor King teach or suggest a page generation module that calculates widths and heights for rows and columns displayed to the user based on data of the data table stored within the client device. Similarly, neither Malloy nor King teach or suggest a page generation module that embeds scroll bars in the web page based on an amount of data within the data table stored by the client device.

Claims 46-52

With respect to independent claim 46, Malloy fails to teach or suggest a server that comprises a report object defining dimensions and members of multidimensional data that are included in an electronic report, a page generation module to access the multidimensional data and format a web page based on the report object, a model converter to translate the report object into a client-side script for creating a client-side representation of the report object, and a packet

engine to communicate the web page and the client-side script to a client device in a stream of packets.

Malloy makes no mention of translating a report-object into a client-side script and then communicating the client-side script to a client device. In fact, Malloy makes no mention client side scripts or report objects at all, let alone the teaching or suggesting a model converter to translate a report object into a client-side script for creating a client-side representation of the report object.

In rejecting claim 46, the Examiner refers to column 10, lines 55-63 and, more specifically, converting data "such as MemberIds." This portion of Malloy, however, describes converting index keys of the relational database at the server to emulate the multi-dimensional database. This passage has no relevance to translating a report object to a client-side script whatsoever. Ramaswamy describes a multiprocessor computer system and adds nothing to overcome the deficiencies of Malloy.

With respect to claim 47, neither Ramaswamy nor Malloy teach or suggest a client device coupled to the server to display the web page to a user, wherein the client device includes a virtual table to store data received from the packet engine. In rejecting claim 47, the Examiner again relies on Malloy and refers to the generally described OLAP architecture and Figure 4. As described above in reference to claim 14, according to Malloy, Figure 4 shows "a structure for storing multi-dimensional data in a relational database structure." Specifically, Figure 4 shows a "schema" for the relational database. Consequently, the Examiner is incorrect in asserting that Figure 4 shows a client device storing a virtual table. Malloy is refering to the relational database itself as maintained by storage manager 114 and BD2 server 116. Malloy is clearly not referring to a virtual table stored on a client device.

With respect to claim 48-52, neither Ramaswamy nor Malloy teach or suggest maintaining state data at the server with respect to the virtual table stored at the client device. As one example, neither Ramaswamy nor Malloy teach or suggest storing state data at the server that defines a current viewing location within the virtual table stored by the client device, as required by claim 48. As another example, neither Ramaswamy nor Malloy teach or suggest storing state data at the server a starting row and a starting column within the virtual table stored by the client device, as required by claim 49.

Claims 21-42 and 53

Applicant's has amended independent claim 21 and independent claim 33 to further clarify the claimed invention. For example, Applicant's has amended claim 21 to recite communicating multidimensional data from a server to a client device, storing the data on the client-device, and storing pointers at the client device defining a viewable window within the data stored at the client device. Claim 21 further recites formatting at the server a web page specifying the viewable window into the stored data on the client device, and displaying the web page to a user via the client device.

The cited references fail to teach or suggest storing pointers at the client device defining a viewable window within the data stored at the client device, as required by amended claim 21. The cited references also fail to teach or suggest formatting at the server a web page to include data located within the viewable window into the data stored on the client device, as further required by claim 21.

In contrast to these requirements, Malloy describes a relational database for emulating a multidimensional database, and refers entirely to the organization of the database itself, i.e., the tables at the server. Applicant's claimed invention is not directed to emulating a multi-dimensional database, and Malloy fails to teach or suggest the elements recited by claim 21. King and Earle offer nothing to address the deficiencies of Malloy. Specifically, in contrast to the requirements of amended claim 21, the cited portion of Earle appears to be describing pointers maintained by a server for retrieving multidimensional data, as further clarified in column 20, lines 59-65 of Earle.

With respect to claim 25, Applicant has amended claim 25 to clarify that the client device receives the user request to scroll the viewable window and updates the pointers based on the request. In contrast to these requirements, Malloy describes a relational database maintained at a database server. Even if the database emulation system of Malloy was modified in view of King as suggested by the Examiner, one would still not achieve Applicant's claimed method that requires storing pointers at the client device defining a viewable window within the data stored at the client device, receiving at the client device a user request to scroll the viewable window through the data, updating at the client device the pointers defining the viewable window based

on the scroll request, and refreshing the display of the client device to include data encompassed by the viewable window.

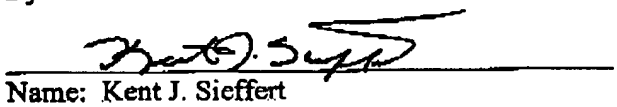
Claims 27-32 recite certain limitations that use the virtual table on the client device to for expanding members of the multidimensional data on the client device. None of the references teach or suggest such functions.

For at least these reasons, the Examiner has failed to establish a prima facie case for non-patentability of Applicant's claims 1-6, 8-13, 15, 19-39, 41-43 and 46-52 under 35 U.S.C. 103(a). Withdrawal of this rejection is requested.

CONCLUSION

All claims in this application are in condition for allowance. Applicant respectfully requests reconsideration and prompt allowance of all pending claims. Please charge any additional fees or credit any overpayment to deposit account number 50-1778. The Examiner is invited to telephone the below-signed attorney to discuss this application.

Date: June 24, 2005

By: 

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